

Exhibit E



United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

Gulf of Mexico OCS Region
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

In Reply Refer To: GM 881A

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

MAY 16 2017

Spectrum Geo, Inc.
Attn: Mr. Miller
11750 Katy Freeway, Suite 900
Houston, TX 77079

RE: Bureau of Ocean Energy Permit Application: E14-006

Dear Mr. Miller:

Pursuant to the authority granted to the Bureau of Ocean Energy Management (the “Bureau”) under section 11 of the Outer Continental Shelf Lands Act (OCSLA), and the accompanying regulations, the Bureau hereby notifies you of its decision to rescind the denial of permit application number E14-006 and resume its evaluation.

On May 1, 2017, the Secretary of the Interior, Ryan Zinke, signed Secretary’s Order 3350, entitled “America-First Offshore Energy Strategy” (“Secretary’s Order 3350”). Section 4a(3) of Secretary’s Order 3350 directs BOEM to “expedite consideration of appealed, new, or resubmitted seismic permitting applications for the Atlantic.”

Consistent with Secretary’s Order 3350, on May 10, 2017, BOEM’s Acting Director, Walter Cruickshank, issued a memorandum (“May 10 Memorandum”) rescinding the January 5, 2017 memorandum issued by former BOEM Director Abigail Ross Hopper, which resulted in the original denial of permit application number E14-006. In the May 10 Memorandum BOEM’s Acting Director informed me of his decision to request that the Interior Board of Land Appeals (IBLA) remand to BOEM the appealed denials, and directed that upon remand, I rescind the denial of your permit application number E14-006 and resume its evaluation. For your convenience, enclosed is a copy of the May 10 Memorandum.

On May 10, 2017, BOEM filed a motion asking that the denial of application number E14-006 be remanded to BOEM for further consideration. On May 15, 2017, the IBLA granted our motion for remand.

In accordance with the May 10 Memorandum, I am rescinding the January 6, 2017 denial of permit application number E14-006 and directing my staff to resume its evaluation.

If you have any questions or comments, please do not hesitate to contact John Johnson at 504-736-2455 (john.johnson@boem.gov).

Sincerely.



Michael A. Celata
Regional Director
Gulf of Mexico Region

Enclosure



United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

WASHINGTON, DC 20240-0001

MAY 10 2017

Memorandum

To: Michael Celata
Regional Director, Gulf of Mexico Region

From: Walter D. Cruickshank
Acting Director *Walter D. Cruickshank*

Subject: Determination to Resume the Evaluation of Atlantic Outer Continental Shelf (OCS) Airgun Seismic Survey Permit Applications

I. Summary

On May 1, 2017, Secretary Zinke signed Secretary's Order 3350 entitled, "America-First Offshore Energy Strategy." Section 4a(3) of Secretary's Order 3350 directs the Bureau of Ocean Energy Management (BOEM) to "expedite consideration of appealed, new, or resubmitted seismic permitting applications for the Atlantic." In keeping with that directive, this memorandum notifies the BOEM Gulf of Mexico Regional Office (GOMR) of my decision to: (i) rescind the directive issued on January 5, 2017, which directed you to deny all pending geological and geophysical (G&G) applications to conduct airgun seismic surveys in the Mid- and South Atlantic Planning Areas (hereinafter, the "Atlantic G&G Permit Applications"); (ii) request that the Interior Board of Land Appeals (IBLA) remand to BOEM the six Atlantic G&G Permit Application denials under appeal; and (iii) direct that you, upon remand, reverse the denials of the Atlantic G&G Permit Applications and resume the evaluation of those applications.

My decision, derived after thoughtful consideration of multiple factors outlined below, is based on the best available science and information, as provided in the Atlantic G&G PEIS,¹ and recognizes the value that updated G&G data could have in expanding the information available to the Secretary of the Interior (Secretary) and BOEM for making decisions on oil and gas leasing.

II. Background

BOEM received a number of applications for G&G surveys in the Atlantic. Since issuance of the Record of Decision (ROD) for the Atlantic G&G PEIS, two permits that did not propose the use of airguns have been issued. However, seven Atlantic G&G Permit Applications remained

¹ Outer Continental Shelf Proposed Geological and Geophysical Activities Mid-Atlantic and South Atlantic Planning Areas Final Programmatic Environmental Impact Statement ("Atlantic G&G PEIS").

pending prior to the directive to deny six of those applications on January 5, 2017 (hereinafter, the "January 5th Directive").²

On January 5, 2017, the BOEM Director directed the denial of six of the seven Atlantic G&G Permit Applications that were still pending with the GOMR.³ The January 5th Directive was premised upon avoiding the possibility of any level of environmental impact from air gun surveys, and based on the Director's determination that there was no immediate need to acquire the Atlantic OCS G&G data. ("[A]llowing the *possibility* of impacts to the environment and existing uses in the Atlantic from airgun seismic surveys - even with the most stringent mitigations being implemented - is unnecessary at this time." January 5th Directive, page 6). The following were listed in the January 5th Directive as factors for concluding that allowing the possibility of impacts from seismic airgun activities was unnecessary:

- "The Secretary decided to remove the Atlantic planning areas from any leasing in the 2017-2022 Five Year Program and there is no immediate need for new G&G data from seismic airgun surveys to inform pending decisions;
- The G&G data to be acquired could become outdated if the Atlantic is offered for oil and gas leasing activities too far into the future, as is the case now with the G&G data currently available;
- Developments in technology might allow for the use of lower impact airguns or other seismic instruments that do not have the potential for the level of impacts on the environment from currently proposed airgun surveys; and
- Although the mitigation measures included in the Atlantic G&G PEIS may be adequate for purposes of minimizing the level of impacts that airguns could cause on the environment (e.g., [North Atlantic Right Whale (NARW)] and other species), there is no certainty that in all cases those mitigation measures will avoid all potential impacts. Allowing the possibility of high intensity impacts from airguns, even if only possible in a nominal number of instances, is unnecessary given the lack of immediate need for acquiring O&G G&G data at this time."

See January 5th Directive, pages 6-7. On January 6, 2017, the Regional Director denied the six Atlantic G&G Permit Applications, and advised applicants of their appeal rights.⁴ All applicants have appealed the denials to the IBLA.⁵

² Memorandum from Abigail Ross Hopper, Director of the Bureau of Ocean Energy Management, to Michael Celata, Regional Director of the Bureau of Ocean Energy Management's Gulf of Mexico Region, "Airgun Seismic Survey Permit Applications," January 5, 2017.

³ The seventh survey application did not involve the use of airguns and remains under review.

⁴ The Atlantic G&G Applications denied were: E14-001 (TGS); E14-003; (Ion/GX Technology Corporation); E14-004 (WesternGeco LLC); E14-005 (CGC Services (US), Inc.); E14-006 (Spectrum Geo, Inc.); and E14-007 (MultiKlient Invest AS).

⁵ On March 2, 2017, notices of appeals were filed for the following Atlantic G&G Permit Applications: E14-001 (TGS); E14-004 (WesternGeco LLC); E14-005 (CGC Services (US), Inc.); E14-006 (Spectrum Geo, Inc.); and E14-007 (MultiKlient Invest AS). The notice of appeal for E14-003 (Ion/GX Technology Corporation) was filed on March 3, 2017.

As provided in the ROD and the Atlantic G&G PEIS, each of the applicants for the Atlantic G&G Permit Applications is required to obtain an Incidental Harassment Authorization (IHA), under the Marine Mammal Protection Act (MMPA), from the National Marine Fisheries Service (NMFS). At the time the Atlantic G&G Permit Applications were denied, NMFS was actively evaluating the IHA requests.

III. Discussion

As discussed below, the decision factors set forth in the January 5th Directive underestimate the benefits of obtaining updated G&G information now, and place undue emphasis on the possibility of impacts despite the conclusions of the Atlantic G&G PEIS and ROD, which show that no significant impacts are expected to occur. In addition, the January 5th Directive fails to appropriately consider the importance of preserving the regulatory review process. Preempting regulatory review of these applications effectively eliminates the process by which the agency normally weighs potential impacts in reviewing applications. Here the G&G information sought addresses not only the applicant's needs, but also the Department's need for acquiring resource information. Given the improvements in seismic technology since the last G&G data in the Atlantic OCS was collected, halting the review of the Atlantic G&G Permit Applications would close the door on the possibility of the Secretary potentially acquiring the most up-to-date information for meeting his Outer Continental Shelf Lands Act (OCSLA) responsibilities.

Updated G&G information is important for many purposes. The acquisition and availability of updated G&G data could provide important resource information to assist the Secretary in fulfilling his statutory duty of evaluating, through the OCSLA section 18 and 19 processes, 43 U.S.C. §§ 1344-1345, whether Atlantic OCS resources, which are held by the Federal Government for the public, "should be made available for expeditious and orderly development, subject to environmental safeguards, in a manner which is consistent with the maintenance of competition and other national needs." 43 U.S.C. § 1332(3). Further, Congress has declared an express statutory purpose "that the extent of oil and natural gas resources of the Outer Continental Shelf [be] assessed at the earliest practicable time." 43 U.S.C. § 1802(9). The preemptive denial of the Atlantic G&G Permit Applications would not further that purpose. Moreover, our Atlantic G&G PEIS shows that with appropriate safeguards, significant impacts are not expected to result from the G&G activities being contemplated in the Atlantic OCS. Given these facts (discussed in more detail below), I find that that you should resume evaluation of the Atlantic G&G Permit Applications, which could, if approved, provide updated G&G data to inform future decision making.

A. Acquisition of G&G Data to Inform Decisions under OCSLA.

Section 18 of OCSLA, 43 U.S.C. § 1344, requires the Secretary of the Interior to prepare an oil and gas leasing program setting forth a five-year schedule of lease sales designed to best meet the future energy needs of the Nation ("5 Year Program"). 43 U.S.C. § 1344(a). On January 17, 2017, the Secretary approved the 2017-2022 Program, which did not include any sales in the Atlantic planning areas. Despite the Secretary's decision to preclude the Atlantic planning areas from any leasing in the 2017-2022 Program, there

continues to be a need for new G&G information in those areas to support decisions by both BOEM and industry.

In the President's April 28, 2017, Executive Order entitled, "Implementing an America-First Offshore Energy Strategy," he directed the Secretary to "give full consideration to revising the schedule of proposed oil and gas lease sales," including consideration of the Mid-Atlantic and South Atlantic Planning Areas, and to "expedite all stages of consideration of ... Seismic Survey permit applications under the Outer Continental Shelf Lands Act...." Sections 3 and 9 of the April 28, 2017 Executive Order, Implementing an America-First Offshore Energy Strategy. Consistent with this direction, Secretary's Order 3350 instructed BOEM to initiate development of a new National OCS Oil and Gas Leasing Program and "expedite consideration of appealed, new, or resubmitted seismic permitting applications for the Atlantic." Section 4a(1) and 4a(3) of Secretary's Order 3350.

As acknowledged in the January 5th Directive, the G&G data available for the Atlantic OCS is outdated and new G&G survey technologies can allow for the collection of much better information ("The existing seismic survey information for the Atlantic Outer Continental Shelf (OCS) was collected more than 30 years ago, and no additional seismic surveys for oil and gas activity have taken place since then. While the older seismic data can be reprocessed, advances in 2D and 3D seismic survey technology now enable collection of much better information." January 5th Directive, page 3). Given the indefinite delay envisioned by the January 5th Directive, the Secretary could be without updated G&G data for any potential lease sales proposed for the Atlantic OCS in the new 5 Year Program or future programs. Rescinding the denial of the Atlantic G&G Permit Applications and resuming their evaluation could result in the acquisition of new G&G data if BOEM ultimately decides to authorize such activities. Now that the planning and analysis process for a new 5 Year Program has been initiated by Secretary's Order 3350, updated G&G for the Atlantic OCS could assist BOEM in performing the following analyses:

1. *Future 5 Year Program Development*

Oil and gas resource assessments are important components of energy policy analysis, and provide important information about the relative potential of U.S. offshore areas as sources of oil and natural gas. In particular, they provide the Secretary with information on the geological characteristics of OCS regions for the preparation of a 5 Year Program, as required by Section 18(a)(2)(A) of OCSLA.

Acquisition, processing, and interpretation of G&G data requires a significant amount of time and resources to accomplish. BOEM's Resource Evaluation Division estimates that it takes approximately two years from permit approval to complete data acquisition, processing, and interpretation for resource assessment purposes. Therefore, expediting the evaluation of the Atlantic G&G Permit Applications could result in updated Atlantic OCS G&G data prior to any lease

sales should they be included in the next 5 Year Program or future programs. Moreover, proceeding with evaluation of the Atlantic G&G Permit Applications would reinstate the normal review process and would further the stated Congressional purpose to “insure that the extent of oil and natural gas resources of the Outer Continental Shelf is assessed at the earliest practicable time.” 43 U.S.C. § 1802(9).

While, as noted in the January 5th Directive, any future G&G data acquired from Atlantic OCS seismic surveys could become outdated before the Atlantic OCS is included in a 5 Year Program, it would, if acquired, certainly inform decisions on *whether* to include the Atlantic OCS in a 5 Year Program. It is also possible, as noted in the January 5th Directive, that less-impactful survey technology may become commercially available sometime in the future. However, waiting for technological advances could require an indefinite delay in assessing “the extent of oil and natural gas resources” in the Atlantic, and would be inconsistent with the Congressional declaration that these resources and their extent be “assessed at the earliest practicable time.” *Id.* There is simply no certainty regarding when any other less-impactful and commercially available technology will be available for purposes of acquiring updated G&G data; moreover, the Atlantic G&G PEIS provides, and ROD requires, methods to mitigate impacts that could potentially occur.

2. *National Resource Assessment*

In order to assist the Secretary in evaluating which OCS areas should be made available for oil and gas development, BOEM conducts regional and prospect-specific analyses of G&G data to evaluate geologic formations deep beneath the ocean floor. These analyses are greatly dependent on the G&G data made available from surveys conducted on the OCS. BOEM correlates seismic reflection characteristics of surveyed formations with empirical data from analogous formations to form the basis of BOEM’s Assessment of Undiscovered Oil and Gas Resource on the OCS. It is this assessment that aids policy-makers when considering energy policy options for the 5 Year Program.

3. *Individual Lease Sale Planning*

The continued acquisition of G&G data is also important to BOEM’s planning and decision processes for any individual lease sales scheduled in an approved 5 Year Program. G&G data helps the Secretary to determine the most prospective areas within a given program area. Specifically, this information is valuable during the Area Identification stage to consider which tracts will be included in the environmental analysis. Accurate resource assessment is also important in the preparation of proposed and final notices of sale, at which time the Secretary makes a final determination on whether to hold a lease sale and, if the decision is to proceed, what areas to offer.

4. *Fair Market Value Determination*

After a lease sale has been held, G&G data plays an important role in assisting the Secretary to meet his obligation to “assure receipt of fair market value for the lands leased and the rights conveyed by the Federal Government.” 43 U.S.C. § 1344(a)(4). Were the Atlantic included in a future 5 Year Program, BOEM would use information from 3-D seismic surveys to improve imaging at the prospect level. This updated information would greatly assist BOEM in evaluating bids received to assure receipt of fair market value for lands leased and rights conveyed by the Federal Government.

5. *Industry Planning and Assessment*

The acquisition of new G&G data is a key element for planning and assessment activities in the oil and gas industry (e.g., making commercial decisions in anticipation of future access to oil and gas resources or the need to improve the imaging and evaluation of nearby oil and gas assets). Planning, requesting, and obtaining the necessary approvals to conduct G&G activities require a significant investment of time and resources and may be timed to inform industry input into BOEM leasing decisions (e.g., responses to requests for interest), as well as industry bidding decisions. The permit application and approval process, once complete, is followed by the physical mobilization, data acquisition, demobilization, and subsequent data processing before producing a usable product for client interpretation. These time lags, which can exceed two years, are taken into consideration for industry planning purposes. In the case of the Atlantic OCS, industry has spent significant time and resources preparing the applications denied as a result of the January 5th Directive.

While there is no certainty that the Atlantic G&G Permit Applications will be approved and permits issued, the decision to resume the evaluation of those applications is consistent with the Department’s commitment to continue working with permit applicants as they take the necessary steps toward receiving a final decision on their permit applications. *See* 2017-2022 Proposed Program, Summary of Decision, S-8 (“Beginning with the 2012–2017 Program, USDOJ set forth a region-specific strategy to address whether conducting offshore oil and gas lease sales in the Mid- and South Atlantic Program Area would be appropriate. Over the course of the last several years, the Department has undertaken a variety of steps to further this information-gathering strategy. These steps included establishing a clear path for geological and geophysical (G&G) permitting in the Atlantic. On July 11, 2014, BOEM issued a ROD establishing the highest practicable level of mitigation measures and safeguards to reduce or eliminate impacts to marine life while clearing the way for appropriate G&G survey activities off the Mid- and South Atlantic coast. Such data would update 40-year old information on the region’s offshore resources. USDOJ has worked, and will continue to work, with permit applicants as they take the necessary steps toward receiving a final decision on the permits.”).

B. Potential for Environmental Harm

Section 11(a) of the OCSLA provides that “any person authorized by the Secretary may conduct geological and geophysical explorations in the OCS, which do not interfere with or endanger actual operations under any lease maintained or granted pursuant to this subchapter, and which are not *unduly harmful* to aquatic life in such area.” 43 U.S.C. § 1340(a)(emphasis added). Similar language appears in Section 11(g) of OCSLA, which provides, in part, that the Secretary can issue a G&G permit if he determines that the “exploration will not be *unduly harmful* to aquatic life in the area, result in pollution, create hazardous or unsafe conditions, unreasonably interfere with other uses of the area, or disturb any site, structure, or object of historical or archeological significance.” 43 U.S.C. § 1340(g)(emphasis added).

As acknowledged in the January 5th Directive, the Atlantic G&G PEIS, issued in February 2014, and the accompanying ROD, signed in July 2014, “identified various mitigation measures whose application would reduce the potential for hearing damage or disrupted behavior [to marine mammals] including, for example, placement of observers on survey vessels, ramp up requirements, exclusion zones around survey vessels, shut down requirements, and closure of areas to surveys at certain places and times when exposure of marine mammals to survey sounds are a particular concern.” January 5th Directive, page 5, citing the Atlantic G&G PEIS and ROD. Furthermore, the Atlantic G&G PEIS and ROD include airgun seismic survey time-area closures for protecting the endangered NARW that prohibit surveys within designated areas when NARWs are present, limit vessel speed, and ensure that sound from surveys outside of NARW critical habitat, seasonal management, and dynamic management areas does not exceed 160 decibels at the boundaries of these areas. There are also time-area closures for the protection of nesting sea turtles that breed offshore the coast of Florida.

While “there is no certainty that in all cases those mitigation measures will avoid all potential impacts,”⁶ our programmatic environmental analysis shows that significant impacts are not expected to result from the G&G activities being contemplated in the Atlantic OCS. Therefore, I find that the possibility of *any* level of environmental impacts occurring does not outweigh the benefits of having updated G&G data in the Atlantic for future decision-making as discussed above.

IV. Directive

The acquisition and availability of updated G&G data assists the Secretary in fulfilling his statutory duty of evaluating Atlantic OCS resources. In light of the foregoing, and consistent with the Atlantic G&G PEIS and ROD on proposed G&G activities in the Atlantic, I am rescinding the January 5th Directive and will be seeking a remand of the applicants’ appeals from the IBLA. Upon remand, please proceed to reverse the denials and resume the evaluation of the Atlantic G&G Permit Applications.

⁶ January 5th Directive, page 6.

Applicants should not be required to resubmit their G&G application to BOEM unless they wish to revise them. My intent in directing the review of applications already on file is to avoid the need for applicants to reinitiate the IHA process with NMFS, and allow the process governing the issuance of IHAs to resume relatively unimpeded. This decision should enable geophysical data collection in the Atlantic to begin within the timeframe covered by the ROD if, after its evaluation, the GOMR decides to approve any of the Atlantic G&G Permit Applications.

Please notify the applicants of this decision.



United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

Gulf of Mexico OCS Region
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

PUBLIC

In Reply Refer To: GM333C

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

JAN 06 2017

Spectrum Geo, Inc.
Attn: Mr. Miller
11750 Katy Freeway, Suite 900
Houston, TX 77079

RE: Bureau of Ocean Energy Management Permit Application: E14-006

Dear Mr. Miller:

Pursuant to the authority granted to the Bureau of Ocean Energy Management (the “Bureau”) under section 11 of the Outer Continental Shelf Lands Act (OCSLA), and the accompanying regulations, the Bureau hereby denies your permit application number E14-006.

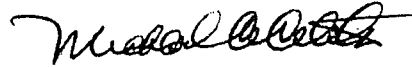
As outlined in the attached memorandum from the Director, the Bureau recognizes that new seismic data has benefits to both industry and the federal government in considering any oil and gas activity in the region. However, the Bureau has determined that even allowing the *possibility* of impacts to the environment and existing uses in the Atlantic from airgun seismic surveys – even with the most stringent mitigations being implemented – is unnecessary at this time because:

- i. The Secretary decided to remove the Atlantic planning areas from any leasing in the 2017-2022 Five Year Program and there is no immediate need for new geophysical and geophysical (G&G) data from seismic airgun surveys to inform pending decisions;
- ii. The G&G data to be acquired could become outdated if the Atlantic is offered for oil and gas leasing activities too far into the future, as is the case now with the G&G data currently available;
- iii. Developments in technology might allow for the use of lower impact airguns or other seismic instruments that do not have the potential for the level of impacts on the environment from currently proposed airgun surveys; and
- iv. Although the mitigation measures included in the Atlantic G&G Programmatic Environmental Impact Statement may be adequate for purposes of minimizing the level of impacts that airguns could cause on the environment (e.g., North Atlantic Right Whale and other species), there is no certainty that in all cases those mitigation measures will avoid all potential impacts. Allowing the *possibility* of high intensity impacts from

airguns, even if only possible in a nominal number of instances, is unnecessary given the lack of immediate need for acquiring oil and gas G&G data at this time.

In light of the reasons for the denial, there are no changes that the applicant could make to change the Bureau's determination and obtain approval. Pursuant 30 C.F.R. 551.10(e), any appeal of this decision shall be made in accordance with 30 C.F.R. part 590.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael A. Celata", with a stylized flourish at the end.

Michael A. Celata
Regional Director
Gulf of Mexico Region

Enclosure



United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT

WASHINGTON, DC 20240-0001

JAN - 5 2017

Memorandum

To: Michael Celata
Regional Director, Gulf of Mexico Region

From: Abigail Ross Hopper
Director

Subject: Airgun Seismic Survey Permit Applications

I. Summary

This memorandum directs you to deny the pending applications to conduct airgun seismic surveys in the Mid- and South Atlantic Planning Areas using the authority granted under section 11 of the Outer Continental Shelf Lands Act (OCSLA). My decision, derived after thoughtful consideration of multiple factors outlined below, is based on the diminished immediate need for seismic survey information in light of the Secretary's decision to remove the Atlantic Program Area from the 2017-2022 Five Year Oil and Gas Program and the promise of emerging noise-quieting technologies. Additionally, given the risks identified in BOEM's Atlantic Outer Continental Shelf (OCS) Proposed Geological and Geophysical (G&G) Activities Mid-Atlantic and South Atlantic Planning Areas Final Programmatic Environmental Impact Statement ("PEIS"), issued in February 2014, and the accompanying Record of Decision (ROD), signed in July 2014, the value of obtaining the information from the surveys does not outweigh the risks of obtaining said information, in light of the removal of the Atlantic from consideration for leasing during the next five years.

A. Authority

Section 11(a) of the OCSLA provides that "any person *authorized by the Secretary* may conduct geological and geophysical explorations in the OCS, which do not interfere with or endanger actual operations under any lease maintained or granted pursuant to this subchapter, and which are not unduly harmful to aquatic life in such area." 43 U.S.C. §1340(a). Consistent with the foregoing, Section 11(g) of OCSLA specifies what determinations must be made by the Secretary before authorizing G&G permits under OCSLA.

Any permit for geological explorations authorized by this section shall be issued *only if the Secretary determines*, in accordance with regulations issued by the Secretary, that

- (1) the applicant for such permit is qualified;
- (2) the exploration will not interfere with or endanger operations under any lease issued or maintained pursuant to this subchapter; and

(3) such exploration will not be unduly harmful to aquatic life in the area, result in pollution, create hazardous or unsafe conditions, unreasonably interfere with other uses of the area, or disturb any site, structure, or object of historical or archeological significance.

43 U.S.C. § 1340(g)(emphasis added). Sections 11(a) and 11(g) of OCSLA do not provide an unrestricted right to the exploration of the OCS and leave to the Secretary the discretion to approve or deny G&G activities governed by Section 11.¹ The Secretary may not authorize G&G activities that are not consistent with the criteria listed in Section 11(g), but otherwise has discretion regarding the G&G permits issued. *Id.*

BOEM G&G regulations implementing Section 11, and which govern permitting OCS G&G activities on unleased lands or on lands under lease to a third party, are found at 30 C.F.R. Part 551. The regulatory provisions for the issuance of G&G permits provide for approval or disapproval of a permit application. 30 C.F.R. 551.5(b). The regulations are not extensive, but provide, "BOEM authorizes you to conduct exploration or scientific research activities under this part in accordance with the Act, the regulations in this part, orders of the Director/Regional Director, and other applicable statutes, regulations, and amendments." 30 C.F.R. 551.3. Concerning the denial of G&G permit applications, the regulations provide that "[i]f BOEM disapproves your application for a permit, the Regional Director will state the reasons for the denial and will advise you of the changes needed to obtain approval." 30 C.F.R. 551.5(b).

The regulations in Part 551 further provide that approved G&G activities must not

- (1) Interfere with or endanger operations under any lease, right-of-way, easement, right-of-use, Notice, or permit issued or maintained under the Act;
- (2) Cause harm or damage to life (including fish and other aquatic life), property, or to the marine, coastal, or human environment;
- (3) Cause harm or damage to any mineral resource (in areas leased or not leased);

¹ The language in Sections 11(a) and 11(g) of OCSLA contrasts sharply with that in Section 11(c) of OCSLA, which provides, in part, that exploration plans "*shall be approved* by the Secretary if [s]he finds that such plan is consistent with the provisions of this subchapter, regulations prescribed under this subchapter, including regulations prescribed by the Secretary pursuant to paragraph (8) of section 1334(a) of this title, and the provisions of such lease." 43 U.S.C. §1340(c)(emphasis added). Section 11(c) contains a high standard for the disapproval of exploration plans:

The Secretary shall approve such plan, as submitted or modified, within thirty days of its submission, except that the Secretary shall disapprove such plan if he determines that (A) any proposed activity under such plan would result in any condition described in section 1334(a)(2)(A)(i) of this title [where the activity "would probably cause serious harm or damage"], and (B) such proposed activity cannot be modified to avoid such condition.

43 U.S.C. §1340(c). In contrast, the relevant subsections of section 11 do not set forth any circumstances under which applications for seismic permits "shall be approved" nor spell out any findings that must be made in order to decline to issue such permits. Thus the Secretary has greater discretion to deny G&G permit applications than she does to deny exploration plans as those plans must be approved absent unavoidable, probable, serious harm or damage.

- (4) Cause pollution;
- (5) Disturb archaeological resources;
- (6) Create hazardous or unsafe conditions; or
- (7) Unreasonably interfere with or cause harm to other uses of the area.

30 C.F.R. 551.6(a).²

B. Seismic Surveys

G&G activities survey the marine environment to acquire information that could be used to determine the resource potential of oil and gas, aid in siting renewable energy structures, and locate potential non-energy minerals such as sand and gravel. They can also assist in developing energy and other resources safely, efficiently, and without harm to natural or cultural heritage.

G&G activities for oil and gas exploration generally include deep penetration seismic airgun surveys, electromagnetic surveys, deep stratigraphic and shallow test drilling, and various remote-sensing methods. Deep penetration seismic surveys are conducted by vessels towing an array of airguns that emit acoustic energy pulses into the seafloor over long durations and over large areas. Many whale species hear and vocalize at low frequencies which overlap with the low frequencies produced by deep penetration seismic surveys. Seismic airguns penetrate several thousand meters beneath the seafloor. These surveys are controversial because of public concerns over potential impacts of the sound produced by these surveys to marine life.

G&G activities for all three program areas (oil and gas, renewable energy, and marine minerals) include high-resolution geophysical surveys (HRG) and other non-airgun surveys to detect geohazards, archaeological resources, and certain types of benthic communities. Techniques also include bottom sampling and analysis (often referred to as geotechnical surveying) to assess seafloor suitability for supporting structures such as platforms, pipelines, cables, and wind turbines, or to evaluate the quantity and quality of sand for beach nourishment and coastal restoration projects. HRG surveys have far less potential to impact marine life than deep penetration seismic using airguns because HRG surveys use less energy, are at a higher frequency that is less in the range of many marine mammals, and are predominately used over a smaller geographic area for a shorter duration.

The existing seismic survey information for the Atlantic Outer Continental Shelf (OCS) was collected more than 30 years ago, and no additional seismic surveys for oil and gas activity have taken place since then. While the older seismic data can be reprocessed, advances in 2D and 3D seismic survey technology now enable collection of much better information.

In 1990, as part of the U.S. Department of the Interior's annual appropriations act, Congress began a moratorium prohibiting Federal spending on oil and gas development on the Atlantic OCS. On June 12, 1998, President Clinton issued a memorandum to the Secretary of the

² Similar requirements are found in the G&G permit application form (Form BOEM-0327).

Interior, which continued leasing restrictions in the Atlantic. Both Congressional and Presidential moratoria were allowed to expire or were lifted, respectively, in 2008. In 2010, Congress mandated that a programmatic environmental impact statement (PEIS) be prepared to comprehensively review potential environmental impacts of G&G activities off the Atlantic coast. BOEM completed the PEIS in February 2014, and a record of decision (ROD) for the PEIS was signed in July 2014.

BOEM has received a number of applications for G&G surveys in the Atlantic. Since issuance of the ROD, two permits that did not propose the use of airguns have been issued. However, six airgun seismic survey permit applications remain pending BOEM's decision. In making its determination, BOEM must consider the impact of the proposed activities on marine life and other factors. Additionally, each of the pending permits is also required to obtain an Incidental Harassment Authorization (IHA), under the Marine Mammal Protection Act, from the National Marine Fisheries Service (NMFS). No IHAs have yet been issued.

C. Five Year Program and Need for Seismic Data

Section 18 of OCSLA requires the Secretary of the Interior to prepare a nationwide offshore oil and gas leasing program, setting forth a five-year schedule of lease sales designed to best meet the Nation's energy needs. On January 29, 2015, BOEM published the 2017-2022 Draft Proposed Program (DPP), which included lease sales in the Gulf of Mexico, Alaska and the Mid- and South Atlantic Program Area. In March 2016, the Secretary released the 2017-2022 Proposed Program, the second of three proposals required to develop the 2017-2022 Five Year Program. After an extensive public input process, the sale that was proposed in the DPP for leases in the Mid- and South Atlantic area was removed from the program. Many factors were considered in the decision to remove this sale, including potential conflicts with other ocean uses by the Department of Defense and commercial interests; potential harm to competing interests; current market dynamics; limited infrastructure; and opposition from many coastal communities. The range, number, and nature of conflicts in the Atlantic are unique to the region and require extensive work to address these conflicts prior to including a lease sale in the program.

In light of the Secretary's decision to remove the Atlantic planning areas from any leasing in the 2017-2022 Five Year Program, the immediate need for new G&G information in that area is greatly reduced. While BOEM has acknowledged that updated seismic information could be helpful for future decisions concerning oil and gas activities in the Atlantic, there are currently no pending decisions which would depend upon the updated information. Further, if the Atlantic is included in a future 5 Year Program, industry would likely apply to conduct additional G&G surveys closer in time to an actual lease sale if significant time has elapsed since prior surveys were conducted. Therefore, in light of other considerations discussed below and the fact that the immediate need for updated seismic information has greatly decreased since the ROD was issued in June 2014, I have determined that it is not appropriate to issue these permits at this time.

D. Emerging Technologies

An effort to develop "quieting" technology has paralleled improvements in seismic survey capability. BOEM has worked with industry to examine technologies with the potential to reduce noise generated during seismic surveys using airguns. In 2014, BOEM organized a workshop with more than 100 representatives from government, industry, non-governmental environmental organizations, and academia to work together and gain a better understanding of these emerging technologies. The most promising alternative to airguns appears to be marine vibroseis technology. While a number of different types of marine vibroseis technologies are under development, some are being evaluated for commercial use, typically for surveys near sensitive habitat or other biological resources. The economic feasibility of this technology remains to be proven and the potential environmental impacts tested. Industry has hesitated at using marine vibroseis or other quieting technologies until they are better understood. There is no silver bullet. However, by engaging industry and the regulators, I expect technologies will be developed that can produce data that is commensurate to that being produced by currently available airgun seismic survey techniques but with much less environmental impact. In fact, an Industry-led study on vibroseis technologies is underway; and industry is regularly updating BOEM on its progress. I believe that BOEM should do what it can to encourage development of these technologies.

D. Marine Mammals

As human presence in the offshore environment has grown, so too has anthropogenic sound. BOEM, and its predecessor MMS, has been a pioneer in sponsoring research on ocean sound, beginning in the 1980s with research on how industrial sounds affect large whales species. The bureau has moved forward since then with studies on an array of topics, including methods to detect, classify and locate marine life near sound sources; improvements in mitigation; quieting technologies; and effects of sound on prey species. BOEM has also begun to examine the even more complex issue of cumulative effects from chronic exposure to anthropogenic sounds.

Deep penetration seismic airgun surveys come with an environmental burden. The high energy sound they produce may damage the hearing or disrupt the behavior of sea animals, particularly marine mammals, if they are too close to the source. For HRG surveys, while injury is possible, it is unlikely given that an animal would need to be within feet of an HRG source for a period of time at enough intensity for the potential to lead to hearing injury. This concern has prompted a wealth of research, guidance, and measures to mitigate potential harm. The PEIS and the accompanying ROD identified various mitigation measures whose application would reduce the potential for hearing damage or disrupted behavior, including, for example, placement of observers on survey vessels, ramp up requirements, exclusion zones around survey vessels, shut down requirements, and closure of areas to surveys at certain places and times when exposure of marine mammals to survey sounds are a particular concern.

I believe the mitigation measures in the ROD contribute substantially to preventing hearing damage and biologically significant disruption of sea animal behavior. However, there is no certainty that in all cases those mitigation measures will avoid all potential impacts.³ I am particularly persuaded by the continually emerging science regarding the North Atlantic right whale (NARW). BOEM's PEIS estimates that between zero and two individual NARWs would potentially experience Level A take (hearing damage) annually and that between zero and 224 individual NARWs would potentially experience Level B take (behavioral disruption) annually if seismic surveys proceed within the parameters established by the PEIS. The assumptions made in these estimates are "conservative," tending to err in overestimating takes. Furthermore, mitigation measures outlined in BOEM's PEIS and included in its ROD should contribute substantially to preventing hearing damage and biologically significant disruption of NARW behavior. However, some NARWs would doubtless be disturbed by seismic activity in the Atlantic. Given that next Five Year Program excludes the Atlantic from leasing from 2017-2022, and the potential for less intrusive seismic technologies in the near future, the potential disadvantage to this small, critically endangered, and declining population is not worth the risk.

II. Directive

As outlined above, new seismic data has benefits to both industry and the federal government in considering any oil and gas activity in the region. However, I have determined that even allowing the *possibility* of impacts to the environment and existing uses in the Atlantic from airgun seismic surveys – even with the most stringent mitigations being implemented – is unnecessary at this time because:

- i. The Secretary decided to remove the Atlantic planning areas from any leasing in the 2017-2022 Five Year Program and there is no immediate need for new G&G data from seismic airgun surveys to inform pending decisions;
- ii. The G&G data to be acquired could become outdated if the Atlantic is offered for oil and gas leasing activities too far into the future, as is the case now with the G&G data currently available;
- iii. Developments in technology might allow for the use of lower impact airguns or other seismic instruments that do not have the potential for the level of impacts on the environment from currently proposed airgun surveys; and

³ The PEIS notes that "the effects of mitigation measures, and other caveats described below, cannot be quantified with precision, and mitigation measures may not be fully implemented. For example, visual and PAM are not 100 percent effective due to factors such as physical conditions (e.g., inclement weather), presence of animals at the surface, difficulty in species identification, lack of vocalizing animals, and limitations in equipment used for monitoring. Further, larger acoustic exclusion zones are more difficult to monitor than smaller zones." PEIS xi-xii

- iv. Although the mitigation measures included in the Atlantic G&G PEIS may be adequate for purposes of minimizing the level of impacts that airguns could cause on the environment (e.g., NARW and other species), there is no certainty that in all cases those mitigation measures will avoid all potential impacts. Allowing the *possibility* of high intensity impacts from airguns, even if only possible in a nominal number of instances, is unnecessary given the lack of immediate need for acquiring O&G G&G data at this time.**

Therefore, please deny forthwith all pending applications to conduct airgun seismic surveys in the Mid- and South Atlantic Planning Areas.



BUREAU OF OCEAN ENERGY MANAGEMENT DOCUMENT TRACKING CONTROL SLIP

Date: 01/05/2017

DCN: OEM0001230		ES No:
Orig Office: DIR-ODM	Input Date: 01/05/2017	Addressee: Mike Celata
Due Date:	Signature Level: D	
Subject: Airgun Seismic Survey Permit Applications		

Comments:

Task Codes:

- | | | |
|-------------------------|--------------------------------|---------------------------|
| 0 - Prepare Draft Reply | 6 - Revise | 12 - Email Draft Reply |
| 1 - Prepare Reply | 7 - Obtain Additional Comments | 13 - Advance Read |
| 2 - Appropriate Action | 8 - Other - See Comments | 14 - File |
| 3 - Surname | 9 - Mail/Distribute | 15 - For Your Information |
| 4 - Signature | 10 - Finalize | 16 - Surname through DTS |
| 5 - Review/Comment | 11 - Simultaneous Surnames | 17 - Required ES Review |

Routing:

Assigned To	Task	Assigned Date	Due Date	Completed Date
DIR-ODM	2 - Appropriate Action	01/05/2017	<i>Enclosed</i>	01/05/2017
DIR-SrA Celina Cunningham	3 - Surname		<i>Cover</i>	1-3-16
DDIR Walter Cruickshank	3 - Surname <i>C. H.</i>			1-5-17
DIR Abigail Hopper	4 - Signature <i>AW</i>			1-5-17

Public

Attachment 1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF OCEAN ENERGY MANAGEMENT

Gulf of Mexico OCS Region

(Insert Appropriate Regional Office)

APPLICATION FOR PERMIT TO CONDUCT GEOLOGICAL OR GEOPHYSICAL
EXPLORATION FOR MINERAL RESOURCES OR SCIENTIFIC RESEARCH
ON THE OUTER CONTINENTAL SHELF

(Section 11, Outer Continental Shelf Lands Act of August 7, 1953, as amended on September 18, 1978, by Public Law 95-372, 92 Statute 629, 43 U.S.C. 1340; and 30 CFR Parts 251 and 551)

Spectrum Geo Inc

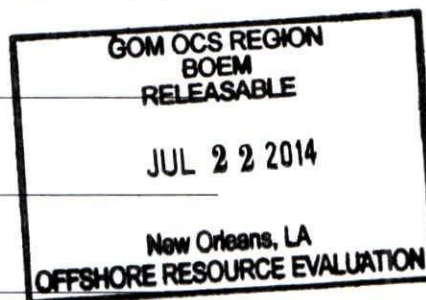
Name of Applicant

16225 Park Ten Place

Number and Street

Houston, Texas 77084

City, State, and Zip Code



Application is made for the following activity: (check one)

_____ Geological exploration for mineral resources

_____ Geological scientific research

☒ Geophysical exploration for mineral resources

_____ Geophysical scientific research



Submit: Original plus three copies, totaling four copies, which include one digital copy, and one public information copy.

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To be completed by BOEM

Permit Number:

E14-006

Date:

08-May-2014

A. General Information

1. The activity will be conducted by:

To Be Determined	For	Spectrum Geo Inc
Service Company Name		Purchaser(s) of the Data
Address		16225 Park Ten Place
City, State, Zip		Houston, Texas 77084
Telephone/FAX Numbers		(281) 647 0602
E-Mail Address		Houston_ops@spectrumasa.com

*Goes to Mike Saunders
Knut Fostad and
one other person
Mike, Saunders@spectrumasa.com*

2. The purpose of the activity is: ☒ Mineral exploration
☐ Scientific research

3. Describe your proposed survey activities (i.e., vessel use, benthic impacts, acoustic sources, etc) and describe the environmental effects of the proposed activity, including potential adverse effects on marine life. Describe what steps are planned to minimize these adverse effects (mitigation measures). For example: 1) Potential Effect; Excessive sound level Mitigation; Soft Start, MMOs, mammal exclusion zone or 2) Potential Effect; Bottom disturbance; Mitigation; ROV deployment/retrieval of bottom nodes) (use continuation sheets as necessary or provide a separate attachment):

2D seismic survey with air gun array. (See attached Appendix 1 for mitigation measures)

4. The expected commencement date is: November 15th, 2014

The expected completion date is: November 14th, 2015

5. The name of the individual(s) in charge of the field operation is:

Knut Fostad / Mike Saunders

May be contacted at:

Spectrum Geo Inc / 16225 Park Ten Place / Houston, TX 77084

Telephone (Local) (281) 647 0602 (Marine) TBD

Email Address: Houston_ops@spectrumasa.com Radio call sign TBD

6. The vessel(s) to be used in the operation is (are):

Name (s) TBD	Registry Number(s) TBD	Registered owners) TBD

7. The port from which the vessel(s) will operate is: TBD (Various)

8. Briefly describe the navigation system (vessel navigation only):

GPS with Integrated Navigation System

(Spectra or equivalent)

B. Complete for Geological Exploration for Mineral Resources or Geological Scientific Research

1. The type of operation(s) to be employed is: (check one)

- (a) Deep stratigraphic test, or
- (b) Shallow stratigraphic test with proposed total depth of , or
- (c) Other

2. Attach a page-size plat showing: 1) The generalized proposed location for each test, where appropriate, a polygon enclosing the test sites may be used, 2) BOEM protraction areas; coastline; point of reference; 3) Distance and direction from a point of reference to area of activity.

C. Complete for Geophysical Exploration for Mineral Resources or Geophysical Scientific Research

1. The type(s) of operation(s) to be employed is (are):

- a) Acquisition method (OBN, OBC, Streamer): Streamer
- b) Type of acquisition: (High Resolution Seismic, 2D Seismic, 3D Seismic, gravity, magnetic, CSEM, etc.)

2D Seismic, Gravity and Magnetometer Data

2. Attach a page-size plat showing:

- a) The generalized proposed location of the activity with a representative polygon,
- b) BOEM protraction areas; coastline; point of reference,
- c) Distance and direction from a point of reference to area of activity.

3. List all energy source types to be used in the operation(s): (Air gun, air gun array(s), sub-bottom profiler, sparker, towed dipole, side scan sonar, etc.).

4,000 in3 to 4,920 in3 air gun array

Operating Pressure: 2,000 psi

4. Explosive charges will _____ will not X be used. If applicable, indicate the type of explosive and maximum charge size (in pounds) to be used:

Type _____ Pounds _____ Equivalent Pounds of TNT _____

D. Proprietary Information Attachments

Use the appropriate form on page 9 for a "geological" permit application or the form on page 11 for a "geophysical" permit application. You must submit a separate Form BOEM-0327 to apply for each geological or geophysical permit.

E. Certification

I hereby certify that foregoing and attached information are true and correct.

Print Name: Richie Miller

SIGNED _____

DATE 30-Apr-2014

TITLE President

COMPANY NAME: _____



TO BE COMPLETED BY BOEM

Permit No. E14-006 Assigned by W. Chad Vaughan Date 03-Jun-2014
of BOEM

This application is hereby:

a. ☒ Accepted

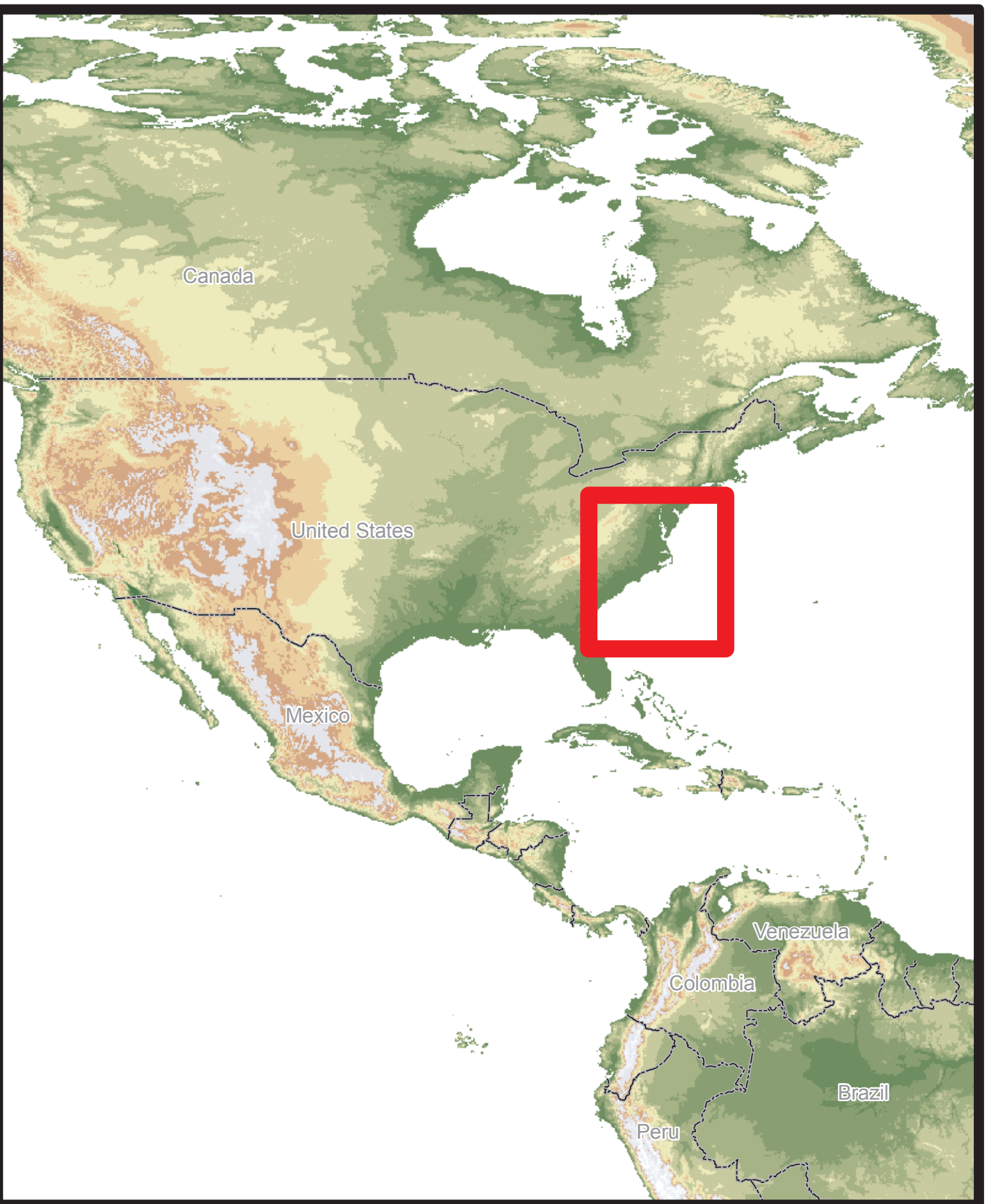
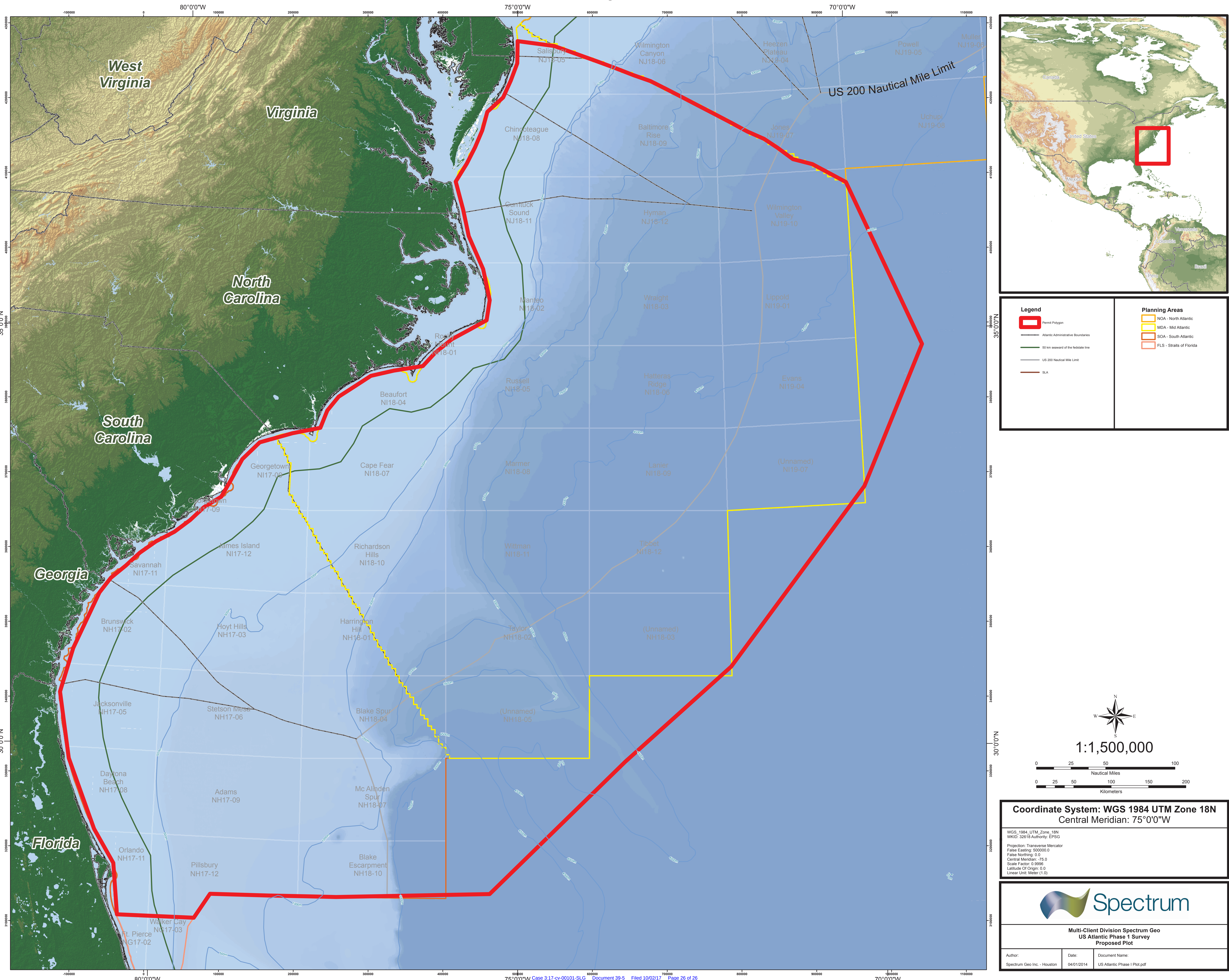
b. ☐ Returned for reasons in the attached

SIGNED _____

TITLE Regional Supervisor

DATE 6/3/14

US Atlantic Phase 1 Survey



Legend

- Permit Polygon
- Atlantic Administrative Boundaries
- 50 km seaward of the federal line
- US 200 Nautical Mile Limit
- SLA

Planning Areas

- NGA - North Atlantic
- MDA - Mid Atlantic
- SOA - South Atlantic
- FLS - Straits of Florida

North arrow and scale bar.

1:1,500,000

0 25 50 100 Nautical Miles

0 25 50 100 150 200 Kilometers

Coordinate System: WGS 1984 UTM Zone 18N
Central Meridian: 75°0'0"W

WGS 1984 UTM Zone 18N
WKID: 32618 Authority: EPSG
Projection: Transverse Mercator
False Easting: 500000.0
False Northing: 0.0
Central Meridian: -75.0
Scale Factor: 0.9996
Latitude Of Origin: 0.0
Linear Unit: Meter (1.0)

Spectrum

Multi-Client Division Spectrum Geo
US Atlantic Phase 1 Survey
Proposed Plot

Author: Spectrum Geo Inc. - Houston	Date: 04/01/2014	Document Name: US Atlantic Phase I Plot.pdf
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